GENETICS

A PERIODICAL RECORD OF INVESTIGATIONS
BEARING ON HEREDITY AND VARIATION

Founded in 1916
by
GEORGE H. SHULL
with the cooperation of

WILLIAM E. CASTLE
EDWIN G. CONKLIN
CHARLES B. DAVENPORT
BRADLEY M. DAVIS
EDWARD M. EAST
ROLLINS A. EMERSON
HERBERT S. JENNINGS
THOMAS H. MORGAN
RAYMOND PEARL

VOLUME 92, MAY-AUGUST, 1979

GENETICS VOLUME 92, MAY–AUGUST, 1979

EDITORIAL BOARD

GEORGE LEFEVRE, *Editor*
California State University at Northridge

WESLEY T. ADAMS (1983)
Oregon State University

SALLY LYMAN ALLEN (1982)
University of Michigan

WYATT W. ANDERSON (1981)
University of Georgia

DOROTHEA BENNETT (1981)
Memorial Sloan-Kettering Cancer Center

JOHN E. BOYNTON (1983)
Duke University

ARTHUR CHOVNICK (1982)
University of Connecticut

IRVING P. CRAWFORD (1979)
University of Iowa

PETER R. DAY (1980)
Connecticut Agricultural Exper. Station

JOHN W. DRAKE (1980)
National Institute of Environmental Health Sciences

HARRISON ECHOLS (1979)
University of California at Berkeley

ROCHELLE E. ESPOSITO (1978)
University of Chicago

WARREN J. EWENS (1979)
University of Pennsylvania

ROGER E. GANSCHOW (1983)
Children's Hospital Research Foundation

DANIEL L. HARTL (1982)
Purdue University

BURKE H. JUDD (1978)
University of Texas

THOMAS C. KAUFMAN (1983)
Indiana University

JAMES F. KIDWELL (1981)
Brown University

GISELA MOSIG (1981)
Vanderbilt University

MASATOSHI NEI (1982)
University of Texas at Houston

MARY LOU PARDUE (1979)
Massachusetts Institute of Technology

RONALD L. PHILLIPS (1983)
University of Minnesota

FRANK H. RUDDLE (1983)
Yale University

LAURENCE SANDLER (1982)
University of Washington

DAVID SCHLESSINGER (1982)
Washington University Medical School

FRED SHERMAN (1981)
University of Rochester

CAROLYN W. SLAYMAN (1982)
Yale University

DAVID T. SUZUKI (1979)
University of British Columbia

ROBERT C. ULLRICH (1984)
University of Vermont

CONRAD F. WEHRHAHN (1983)
University of British Columbia

BRUCE WEIR (1982)
North Carolina State University

SHELDON WOLFF (1982)
University of California at San Francisco

Copy Editor, JOHN H. MASTERS
Editorial Assistant, SHIRLEY HARTMAN
Business Manager, WALTER E. NEAL
Assistant Business Manager, CONNIE S. HUFNAGEL

PUBLISHED AT AUSTIN, TEXAS
by the Genetics Society of America
Printed at the University of Texas Printing Division, Austin

TABLE OF CONTENTS

to Volume 92, May–August, 1979

AVISE, JOHN C., ROBERT A. LANSMAN and ROSEMARY O. SHADE, The use of restriction endonucleases to measure mitochondrial DNA sequence relatedness in natural populations. I. Population structure and evolution in the genus Peromyscus 279–295

BAILEY, DONALD W., An assay for histocompatibility gene mutations in mice s59–s62

BAKER, BRUCE S. and DAVID A. SMITH, The effects of mutagen-sensitive mutants of *Drosophila melanogaster* in nonmutagenized cells 833–847

BERGER, FRANKLIN G., GAIL A. M. BREEN and KENNETH PAIGEN, Genetic determination of the developmental program for mouse liver β-galactosidase: involvement of sites proximate to and distant from the structural gene 1187–1203

BIRCHLER, JAMES A., A study of enzyme activities in a dosage series of the long arm of chromosome one in maize 1211–1229

BOND, D. J., The genetics of a probable insertional translocation in *Sordaria brevicollis* 75–82

CARPENTER, ADELAIDE T. C., Synaptonemal complex and recombination nodules in wild-type *Drosophila melanogaster* females 511–541

CHAPCO, WILIAM, Corrrelations between chromosome segments and fitness in *Drosophila melanogaster*. II. The *X* chromosome and egg viability 595–601

CHARLESWORTH, B., D. CHARLESWORTH, M. LOUKAS and K. MORGAN, A study of linkage disequilibrium in British populations of *Drosophila subobscura* 983–994

CHENG, MIN-LEE and CARL S. HACKER, The genetics of hexokinase in a mosquito, *Culex pipiens* L. 903–913

CLARK, ANDREW, The effects of interspecific competition on the dynamics of a polymorphism in an experimental population of *Drosophila melanogaster* 1315–1328

CLARK, M. A., W. B. MCCRADY and C. L. FIELDING, Independent production of CO_2 sensitivity by nuclear gene *Dly* and a transmissible agent from delayed-recovery *Drosophila melanogaster* 503–510

CLAVERIE, JEAN-MICHEL, ARISTIDE COMLAN DE SOUZA and JEAN-PAUL THIRION, Mutations of Chinese hamster somatic cells from 2-deoxygalactose sensitivity to resistance 563–572

COBBS, GARY, A model allowing continuous variation in electrophoretic mobility of neutral alleles 669–678

COOPER, TERRANCE G., MARY GORSKI and VANESSA TUROSCY, A cluster of three genes responsible for allantoin degradation in *Saccharomyces cerevisiae* 383–396

COYNE, J. A., W. F. EANES and R. C. LEWONTIN, Letter to the Editor 353–396

CROW, JAMES F., Minor viability mutants in Drosophila s165–s172

CSEKO, Y. M. T., N. A. DOWER, P. MINOO, L. LOWENSTEIN, G. R. SMITH, J. STONE and R. SEDEROFF, Evolution of polypyrimidines in Drosophila 459–484

DELBRÜCK, M. and T. OOTAKI, An unstable nuclear gene in Phycomyces 27–48

DEMARCO, ANTONIO, MARIA PIA BELLONI, RENATA COZZI, DARIO FEBBO and RUGGERO RICORDY, Aberrations induced in chromosomes of somatic cells of *Drosophila melanogaster* irradiated in C-metaphase 175–187

DESCHAMPS, JACQUELINE and JEAN-MARIE WIAME, Mating-type effect on *cis* mutations leading to constitutivity of ornithine transaminase in diploid cells of *Saccharomyces cerevisiae* 749–758

DRISCOLL, C. J., Mathematical comparison of homologous and homoeologous chromosome configurations and the mode of action of the genes regulating pairing in wheat 947–951

EMIGH, TED H., The dynamics of finite haploid populations with overlapping generations. I. Moments, fixation probabilities and stationary distributions 323–337

EMIGH, TED H., The dynamics of finite haploid populations with overlapping generations. II. The diffusion approximation 339–351

ENGELS, WILLIAM R. and CHRISTINE R. PRESTON, Hybrid dysgenesis in *Drosophila melanogaster*: the biology of female and male sterility 161–174

EVANS, EDWARD P., Cytological methods for the study of meiotic properties in mice ... s97–s103

FELDMAN, MARCUS W. and URI LIBERMANN, On the number of stable equilibria and the simultaneous stability of fixation and polymorphism in two-locus models 1355–1360

FESTING, MICHAEL F. W. and GEORGE L. WOLFF, Quantitative characters of potential value in studying mutagenesis s173–s179

FRANKEL, CARL, Meiotic-like recombination in vegetative dikaryons of *Schizophyllum commune* 1121–1126

GELBART, WILLIAM M. and ARTHUR CHOVNICK, Spontaneous unequal exchange in the rosy region of *Drosophila melanogaster* 849–859
GOLDSMITH, MARIAN R. and EILEEN CLERMONT-RATTNER, Organization of the chorion genes of *Bombyx mori*, a multigene family. II. Partial localization of three gene clusters 1173–1185
GREEN, M. M. and S. H. Y. SHEPHERD, Genetic instability in *Drosophila melanogaster*: the induction of specific chromosome *2* deletions by *MR* elements 823–832
HALL, JEFFREY C., Control of male reproductive behavior by the central nervous system of Drosophila: dissection of a courtship pathway by genetic mosaics 437–457
HANSMANN, I., The use of pre- and post-implantation mammalian embryos to study the cytogenetic effects of mutagens on parental germ cells s139–s142
HENSON, JOAN M., HERMAN CHU, CARLEEN A. IRWIN and JAMES R. WALKER, Isolation and characterization of *dnaX* and *dnaY* temperature-sensitive mutants of *Escherichia coli* 1041–1059
HERMAN, ROBERT K., JAMES E. MADL and CLAIRE K. KARI, Duplications in *Caenorhabditis elegans* 419–435
HILL, WILLIAM G., A note on effective population size with overlapping generations 317–322
HINTON, CLAUDE W., Two mutators and their suppressors in *Drosophila ananassae* 1153–1171
HIRAIZUMI, YUICHIRO, A new method to distinguish between meiotic and premeiotic recombinational events in *Drosophila melanogaster* 543–554
HJORTH, J. PETER, MIRIAM MEISLER and J. TØNNES NIELSEN, Genetic variation in amount of salivary amylase in the bank vole, *Clethrionomys glareola* 915–930
HOEL, DAVID G., Sequential methods in genetic risk assessment s195–s198
HOPPE, I., H. M. JOHNSTON, D. BIEK and J. R. ROTH, A refined map of the *hisG* gene of *Salmonella typhimurium* 17–26
JOHNSON, GEORGE and VICTORIA FINNERTY, Letter to the Editor 357–360
JOHNSON, GEORGE and VICTORIA FINNERTY, Letter to the Editor 683
JOHNSON, THOMAS E., A Neurospora mutation that arrests perithecial development as either male or female parent 1107–1120
JOHNSON, T. K. and B. H. JUDD, Analysis of the cut locus of *Drosophila melanogaster* 485–502
JOHNSTON, H. MARK and JOHN R. ROTH, Histidine mutants requiring adenine: selection of mutants with reduced *hisG* expression in *Salmonella typhimurium* 1–15
KIDWELL, MARGARET G. and JILL B. NOVY, Hybrid dysgenesis in *Drosophila melanogaster*: sterility resulting from gonadal dysgenesis in the*P-M* system 1127–1140
KLAR, AMAR J. S., SEYMOUR FOGEL and DAVID N. RADIN, Switching of a mating-type a mutant allele in budding yeast *Saccharomyces cerevisiae* 759–776
KLAR, AMAR J. S., SEYMOUR FOGEL and KARIN LUSNAK, Gene conversion of the mating-type locus in *Saccharomyces cerevisiae* 777–782
KLECKNER, NANCY, DAVID A. STEELE, KATHERINE REICHARDT and DAVID BOTSTEIN, Specificity of insertion by the translocatable tetracycline-resistance element Tn*10* 1023–1040
KLOSE, J., Isoelectric focusing and electrophoresis combined as a method for defining new point mutations in the mouse s13–s24
KOHN, HENRY I., X-ray mutagenesis: results with the H-test compared with others and the importance of selection and/or repair s63–s66
KRIDER, HALLIE M., BARRY YEDVOBNICK and BRYAN I. LEVINE, The effect of *abo* phenotypic expression on ribosomal DNA instabilities in *Drosophila melanogaster* 879–889
LAMB, BERNARD C and AGLAIA GHIKAS, The intergradation, genetic interchangeability and interpretation of gene conversion spectrum types 49–65
LATT, SAMUEL A., Sister-chromatid exchanges s83–s95
LAURIE-AHLBERG, C. C. and B. S. WEIR, Allozymic variation and linkage disequilibrium in some laboratory populations of *Drosophila melanogaster* 1295–1314
LAWRENCE, CHRISTOPHER W. and ROSHAN B. CHRISTENSEN, Ultraviolet-induced reversion of *cyc1* alleles in radiation-sensitive strains of yeast. III. *rev3* mutant strains 397–408
LAX, CAROL, SEYMOUR FOGEL and CAROLE CRAMER, Regulatory mutants at the *his1* locus of yeast 363–382
LEBLON, G., Intragenic suppression at the *b2* locus in *Ascobolus immersus*. II. Characteristics of the mutations in groups *A* and *E* 1093–1106
LESTER, L. J. and R. K. SELANDER, Population genetics of haplodiploid insects 1329–1345
LEVITT, ROY C., JACQUELENE M. FYSH, NANCY M. JENSEN and DANIEL W. NEBERT, The *Ah* locus: biochemical basis for genetic differences in brain tumor formation in mice 1205–1210
LI, WEN-HSIUNG, Maintenance of genetic variability under the pressure of neutral and deleterious mutations in a finite population 647–667
LIEBMAN, SUSAN W., ARJUN SINGH and FRED SHERMAN, A mutator affecting the region of the iso-1-cytochrome *c* gene in yeast 783–802
LIN, BOR-YAW, Two new *B-10* translocations involved in the control of nondisjunction of the *B* chromosome in maize 931–945

LORIMER, NANCY, The genetics of melanism in *Malacosoma disstria* Hübner (Lepidoptera: Lasiocampidae) 555–561
LÜNING, K. G., Some problems in the assessment of risks s203–s209
LUSKIN, MITCHELL and THOMAS NAGYLAKI, Numerical analysis of weak random drift in a cline 297–303
LYNCH, J. C. and E. R. VYSE, Genetic variability and divergence in grayling, *Thymallus arcticus* 263–278
MALLING, H. V., *In vivo* point-mutation systems s67–s71
MALMBERG, RUSSELL L., Temperature-sensitive variants of *Nicotiana tabacum* isolated from somatic cell culture 215–221
MANES, COLE, Developmental considerations in the attempt to detect mutations in the mammalian genome s135–s138
MARTINDALE, DUANE W. and RONALD E. PEARLMAN, An enrichment for temperature-sensitive mutants in *Tetrahymena thermophila* 1079–1092
MCMILLIN, DAVID E., D. G. ROUPAKIAS and JOHN G. SCANDALIOS, Chromosomal location of two mitochondrial malate dehydrogenase structural genes in *Zea mays* using trisomics and *B-A* translocations 1241–1250
MENEELY, PHILIP M. and ROBERT K. HERMAN, Lethals, steriles and deficiencies in a region of the *X* chromosome of *Caenorhabditis elegans* 99–115
MILKMAN, ROGER, Letter to the Editor 361
MITTER, CHARLES and DOUGLAS J. FUTUYMA, Population genetic consequences of feeding habits in some Forest Lepidoptera 1005–1021
MOSES, MONTROSE J., The synaptonemal complex as an indicator of chromosome damage s73–s82
NEEL, JAMES V., Some trends in the study of spontaneous and induced mutation in man s25–s37
NEWCOMBE, HOWARD B., Problems of assessing risks *versus* mutations s199–s201
NOVAK, EDWARD K. and RICHARD T. SWANK, Lysosomal dysfunctions associated with mutations at mouse pigment genes 189–204
PARMA, DAVID H., MARSHA DILL and MARY K. SLOCUM, Realignment of the genetic map of the terminus of the *rIIB* cistron of bacteriophage T4 711–720
PEDERSEN, ROGER A. and LAWRENCE S. GOLDSTEIN, Detecting mutations expressed during early development of cultured mamallian embryos s143–s151
PETERSON, NANCY S., GALINA MOLLER and HERSCHEL K. MITCHELL, Genetic mapping of the coding regions for three heat-shock proteins in *Drosophila melanogaster* .. 891–902
POPP, R. A., G. P. HIRSCH and B. S. BRADSHAW, Amino acid substitution: its use in detection and analysis of genetic variants s39–s47
POWELL, JEFFREY R., Population genetics of Drosophila amylase. II. Geographic patterns in *D. pseudoobscura* 613–622
POWELL, JEFFREY R. and JENIFER M. LICHTENFELS, Population genetics of Drosophila amylase. I. Genetic control of tissue-specific expression in *D. pseudoobscura* 603–612
ROBERTS, PAUL A., Rapid change of chromomeric and pairing patterns of polytene chromosome tips in *D. melanogaster*: migration of polytene-nonpolytene transition zone? 861–878
RODERICK, THOMAS H., Chromosomal inversions in studies of mammalian mutagenesis s121–s126
RODERICK, THOMAS H. and WILLIAM SHERIDAN, Introduction s1–s3
ROSE, A. M. and D. L. BAILLIE, The effect of temperature and parental age on recombination and nondisjunction in *Caenorhabditis elegans* 409–418
ROSENTHAL, RICHARD, PATRYCE A. TOYE, RUTH Z. KORMAN and STANLEY A. ZAHLER, The prophage of $SP\beta c2dcitK_1$, a defective specialized transducing phage of *Bacillus subtilis* 721–739
RUHLAND, AXEL and MARTIN BRENDEL, Mutagenesis by cytostatic alkylating agents in yeast strains of differing repair capacities 83–97
RUSSELL, LIANE B., *In vivo* somatic mutation systems in the mouse s153–s163
RUSSELL, LIANE B. and G. D. RAYMER, Analysis of the albino-locus region of the mouse. III. Time of death of prenatal lethals 205–213
RUSSELL, W. L., Comments on mutagenesis risk estimation s187–s194
RYMAN, NILS, FRED W. ALLENDORF and GUNNAR STAHL, Reproductive isolation with little genetic divergence in sympatric populations of brown trout (*Salmo trutta*) .. 247–262
SAMSON, R. G., M. K. BRAKKE and W. A. COMPTON, Evidence for gene inactivation in the virus-induced aberrant ratio phenomenon in maize 1231–1239
SCHAEFER, RUTH E., MARGARET G. KIDWELL and ANNE FAUSTO-STERLING, Hybrid dysgenesis in *Drosophila melanogaster*: morphological and cytological studies of ovarian dysgenesis 1141–1152
SCHVARTZMAN, J. B., F. CORTÉS, A. GONZÁLEZ-FERNÁNDEZ, C. GUTIÉRREZ and J. F. LÓPEZ-SÁEZ, On the nature of sister chromatid exchanges in 5-bromodeoxyuridine-substituted chromosomes 1251–1264

SEGA, GARY A., Unscheduled DNA synthesis (DNA repair) in the germ cells of male mice—its role in the study of mammalian mutagenesis s49–s58
SELBY, PAUL B., Induced skeletal mutations s127–s133
SHAW, KAREN J. and CLAIRE M. BERG, *Escherichia coli* K-12 auxotrophs induced by insertion of the transposable element Tn*5* 741–747
SINGH, RAMA S., Letter to the Editor 679
SNOW, RICHARD, Maximum likelihood estimation of linkage and interference from tetrad data 231–245
SNYDER, THOMAS P. and FRANCISCO J. AYALA, Frequency-dependent selection at the *PGM-1* locus of *Drosophila pseudoobscura* 995–1003
STAM, P., Interference in genetic crossing over and chromosome mapping 573–594
STROBECK, CURTIS, Partial selfing and linkage: the effect of a heterotic locus on a neutral locus 305–315
STROMAN, PER, WILLIAM REINERT, MARY E. CASE and NORMAN H. GILES, Organization of the *qa* gene cluster in *Neurospora crassa*: direction of transcription of the *qa-3* gene 67–74
SUHR-JESSEN, PETER B. and EDUARDO ORIAS, Mutants of *Tetrahymena thermophila* with temperature-sensitive food vacuole formation. I. Isolation and genetic characterization 1061–1077
TEMPLETON, ALAN R., The unit of selection in *Drosophila mercatorum*. II. Genetic revolution and the origin of coadapted genomes in parthenogenetic strains 1265–1282
TEMPLETON, ALAN R., The parthenogenetic capacities and genetic structures of sympatric populations of *Drosophila mercatorum* and *Drosophila hydei* 1283–1293
TRAUT, H., The intercellular distribution of mutations induced in oocytes of *Drosophila melanogaster* by chemical and physical mutagens 151–160
WARD, E. J., Chiasma frequency and distribution in a maize family segregating for *K10* and trisomy *10* 223–230
WEINSTOCK, GEORGE M., MIRIAM M. SUSSKIND and DAVID BOTSTEIN, Regional specificity of illegitimate recombination by the translocatable ampicillin-resistance element Tn*1* in the genome of phage P22 685–710
WEITKAMP, LOWELL R. and PETER Z. ALLEN, Evolutionary conservation of equine *Gc* alleles and of mammalian *Gc*/albumin linkage 1347–1354
WICKNER, REED B., Mapping chromosomal genes of *Saccharomyces cerevisiae* using an improved genetic mapping method 803–821
WIMER, RICHARD E., A behavioral measure for detecting mutations s181–s185
WOMACK, JAMES E., Single gene differences controlling enzyme properties in the mouse s5–s12
WOODRUFF, R. C. and M. ASHBURNER, The genetics of a small autosomal region of *Drosophila melanogaster* containing the structural gene for alcohol dehydrogenase. I. Characterization of deficiencies and mapping of *Adh* and visible mutations 117–132
WOODRUFF, R. C. and M. ASHBURNER, The genetics of a small autosomal region of *Drosophila melanogaster* containing the structural gene for alcohol dehydrogenase. II. Lethal mutations in the region 133–149
WYROBEK, A. J., Changes in mammalian sperm morphology after X-ray and chemical exposures s105–s119
YOUNG, J. P. W., Enzyme polymorphism and cyclic parthenogenesis in *Daphnia magna*. I. Selection and clonal diversity 953–970
YOUNG, J. P. W., Enzyme polymorphism and cyclic parthenogenesis in *Daphnia magna*. II. Heterosis following sexual reproduction 971–982
ZOUROS, E., Mutation rates, population sizes and amounts of electrophoretic variation of enzyme loci in natural populations 623–646